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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/781,960 | 02/14/2001 | Martin Hartung | 1860/49624 | 9752 |

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Evenson, McKeown
Edwards & Lenahan, P.L.L.C.
Suite 700
1200 G Street, N.W.
Washington, DC 20005

EXAMINER

LEE, JOHN D

ART UNIT PAPER NUMBER

2874

DATE MAILED: 09/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/781,960

Applicant(s)

HARTUNG, MARTIN

Examiner

John D. Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on February 14, 2000. It is noted, however, that applicant has not filed a certified copy of the German application as required by 35 U.S.C. § 119(b).

The single sheet of formal drawing filed with this application is acceptable.

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claims 6, 7, 21-24, 29, and 30 are objected to because of the following informalities: each of these claims includes in its preamble the term "the light wave converter", but the correct term is "the light wave converter assembly". Appropriate correction is required.

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-17, 24, 26, and 29-31 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 12-14 employ the terminology "...luminesce, *in particular* fluoresce" (emphasis added). The terminology "in particular" states a preference, and a preference is properly set forth in the specification rather than in the claims. When stated in the claims, preferences lead to confusion over the intended scope of a claim. See MPEP § 2173.05(d). Claims 12-14 are therefore indefinite. Claims 15-17 appear to be setting forth Markush groupings, but the Markush language is improperly constructed and the claims are accordingly

indefinite. Note that the word "comprising" is used twice in each list, but acceptable Markush language must not include such open-ended terms as "comprising". See MPEP § 2173.05(h). Further, in these three claims, it is not known what is meant by "the auxiliary group elements". Still further, these three claims employ the indefinite terminology "and/or". Claims 15-17 are therefore indefinite. Claim 24 is indefinite because it adds an element to a previously claimed combination without any indication of how the additional element is connected or interrelated. Furthermore, the term "thread" has many meanings and is thus indefinite without more description. Claim 26 is indefinite because the added limitation ("can be sterilized with hot steam") is not a positive limitation in any sense. Note that anything "can be sterilized with hot steam"! The "uses" set forth in claims 29 and 30 are so vague as to render the claims unintelligible as to what they may be directed. Note that there are myriads of "dental processes" and an untold number of "diagnostic purposes". What specific uses are intended? Claims 29 and 30 are therefore indefinite. In step c) of the process set forth in claim 31, the indefinite terminology "and/or" is employed, so that the intended method step is not precisely defined. Claim 31 is therefore indefinite. In the next-last-line line of claim 31, it is not understood why the past tense ("was") is used rather than the present tense ("is") which is used in the remainder of the claim.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-30 and 32-34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,884,860 to Brown. Brown discloses a light wave converter assembly that comprises a multilayered light waveguide and light wave converter substances in the waveguides which operate by optical fluorescence to convert incident light to light of longer wavelengths. Since any light waveguide, including the waveguide of Brown, has an input end and an output end, there is obviously an exit port in the reference device. The reference does not specifically disclose, however, that the converted light is guided together with a portion of the incident unconverted light to the exit port. The person of ordinary skill in the art would know and understand that this is the case, however, since no optical conversion mechanism is 100% perfect, and since there is always some residual incident light that remains unconverted. In the absence of specific filtering means, both unconverted and converted light are guided together to the exit port. Brown also does not specifically disclose that the output spectrum (at the exit port) is of the color white. The Brown device, though, does produce light in many different wavelengths throughout the visible portion of the spectrum. It is believed obvious that the resultant combined light (at the exit port) would consist of a wide enough spectra to appear as white light. This, too, would be known and understood by a person of ordinary skill in the art. TABLE 1 in column 7 of Brown shows that the wavelength ranges for incident light are essentially the same as the wavelength range claimed herein. A person of ordinary skill in the art would thus have found applicant's claimed wavelength range to be obvious. There are no bandpass filters or brightness controllers disclosed in Brown, but these are add-on

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elements that are used to tailor an optical output for a particular application. As such, their addition to the device of Brown would have been obvious. Any kind of incident light source could be used in Brown, including a polymerization lamp (Examiner's note: since "polymerization lamp" is not an art-recognized term, it is assumed that this is a lamp that emits at a wavelength ordinarily used to polymerize organic compounds). Notice that the fluorescing wavelength-converting substances used in Brown are organic dyes like the substances claimed by applicant. The light waveguide in the reference is certainly flexible, but the size of the exit port is not disclosed. Applicant's claimed size (1 to 10 mm) is typical, however, and choice of such a size for the exit port in Brown would thus have been obvious. There would clearly be a "coupling" involved at the point where the incident light is input into the Brown light waveguide. The weight percentage of the fluorescing substances in Brown appear to fall well within the wide range set forth by applicant in claim 25. Clearly the Brown converter device "can be" sterilized with hot steam, if desired, and could be used in any process requiring the type of light output thereby. If a "polymerization lamp" were used as the incident light source, the reference device could, by definition, be a "module" of such lamp.

Claim 31 is rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,884,860 to Brown in view of U.S. Patent 6,208,458 to Galvanauskas et al. Brown does not specify the use of the light wave converter assembly in a dental process (e.g. the illumination of a hard tooth substance). Galvanauskas et al, however, teaches that optical waveguide type light wave converter assemblies can be used in dental procedures (see column 16, lines 46-50, and column 17, lines 19-24, of

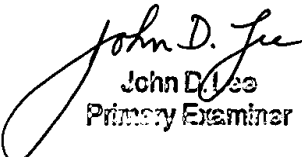
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Galvanauskas et al). The use of the light wave converter assembly of Brown in any dental process, then, would have been obvious to the person of ordinary skill in the art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,249,372 to Kobayashi et al describes a light wave converter assembly which operates by optical fluorescence to convert incident light to light of longer wavelengths, but which is **not** a waveguide type of device. A similar luminescent device can be seen in U.S. Patent 6,117,529 to Leising et al. U.S. Patent 5,144,636 to Yoshida et al shows a waveguide type light wave converter assembly which results in a white light output, but the conversion mechanism is nonlinear quasi-phase matching and the incident light is converted into light of **shorter** wavelengths.

The prior art documents submitted by applicant in the Information Disclosure Statement filed on May 14, 2001, have been considered (to the extent possible) and have been made of record (note the attached copy of form PTO-1449).

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.


John D. Lee
Primary Examiner